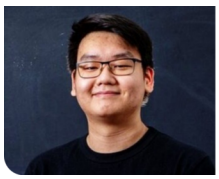
OST Marketplace App for Android and iOS using Kotlin Multiplatform (KMP)

KMP Technology Research, Cross-Platform App Implementation and Cloud Backend

Graduate



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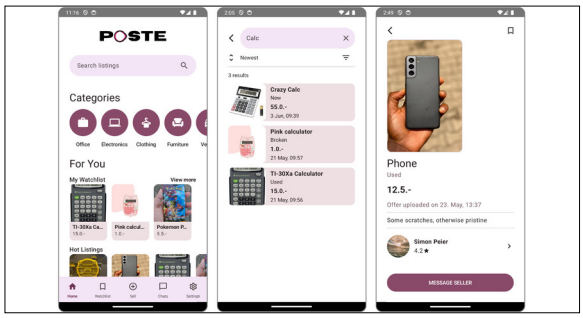
Initial Situation: Whether students want to reduce clutter, generate extra income or contribute to a more sustainable economy, having an accessible way to sell and buy secondhand or new items can be beneficial. Unfortunately, existing marketplaces are not specifically designed for an academic environment. Their users are spread out and trust is limited, which discourages users from using them. To foster the usage of such marketplaces and combat the mentioned issues, a university-specific marketplace app should be created.

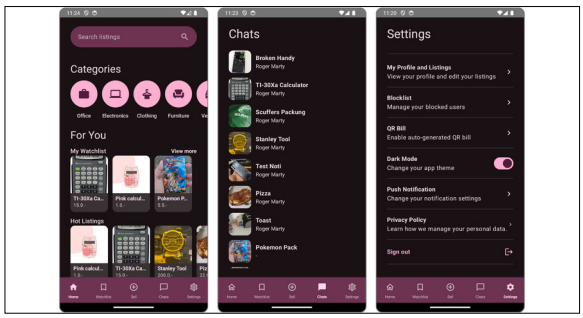
Approach / Technology: For the frontend, a cross-platform mobile app was developed. A major part of this thesis was the research and evaluation of Kotlin Multiplatform, which was used to develop the app. This provided both theoretical and practical insights into the technology. Various multiplatform-compatible frameworks and libraries such as Compose Multiplatform, Voyager and Koin were utilized. The backend is a REST API built with Python using FastAPI. SQLAlchemy is used as the ORM to interact with a PostgreSQL database. The entire backend, including a search engine, is hosted on AWS, leveraging services such as ECS Fargate, RDS, EC2, and S3. Firebase was used for push notifications, PubNub for real-time chat and Microsoft Entra ID for authentication.

Result: The Kotlin Multiplatform research has concluded that the technology is sufficiently advanced to be used in productive applications. While still young in comparison to its competitors, JetBrains' support for its technology is evident and its progress is rapid. As of May 6, 2025, the iOS platform has also been marked as stable, meaning that cross-platform mobile development is now fully stable in Kotlin Multiplatform. The developed app, POSTE, is a fully functional marketplace where users can create listings, browse listings, initiate a chat with the seller and much more. OST students can sign in using their OST-specific Microsoft account. This not only enhances the trust among users but also gives a sense of community.

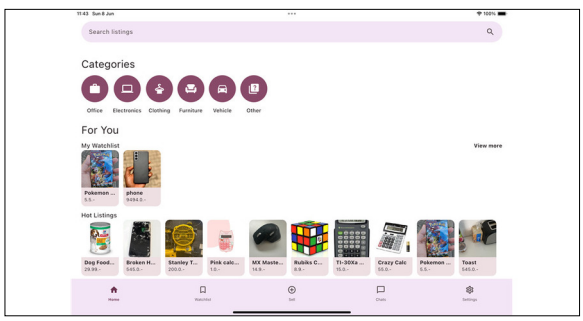
MVP App - Home Screen, Search and Listing
Own presentment



MVP App - Selection of screens in dark mode
Own presentment



MVP App - Home Screen Tablet Version
Own presentment



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Subject Area
Frontend Engineering